CALIBRATION STANDARD SPECIFICATION

FOR AN

OPTICAL CONDENSATION HUMIDITY ANALYZER SYSTEM

* * * * * * * *

PROCUREMENT PACKAGE

Prepared by: Naval Warfare Assessment Division
Measurement Science Directorate
Code MS-33
Corona, CA 91718-5000

November, 1994
Encl (1)

CALIBRATION STANDARD SPECIFICATION FOR AN

OPTICAL CONDENSATION HUMIDITY ANALYZER SYSTEM

1. SCOPE

1.1 Scope. This specification defines the mechanical, electrical, and electronic characteristics for an Optical Condensation Humidity Analyzer System. This equipment is intended to be used by Navy personnel in shipboard and shorebased laboratories to calibrate or to assist in the calibration of humidity chambers, thermo-humidigraphs, humidity recorders, psychrometers, and heat stress monitors. For the purposes of this specification, the Optical Condensation Humidity Analyzer System shall be referred to as the OCHAS.

1.2 OCHAS. The OCHAS shall consist of a humidity analyzer, high and low range chilled mirror sensors, a temperature sensor, a pressure sensor, and a sampling system.

2. APPLICABLE DOCUMENTS

2.1 Controlling Specifications. MIL-T-28800, "Military Specification, Test Equipment for use with Electrical and Electronic Equipment, General specification for," and all documents referenced therein of the issues in effect on the date of this solicitation shall form a part of this specification.

3. REQUIREMENTS

3.1 General. The OCHAS shall conform to the Type II, Class 5, Style E requirements as specified in MIL-T-28800 for Navy shipboard and shorebased use as modified below. The use of material restricted for Navy use shall be governed by MIL-T-28800.

3.1.1 Design and Construction. The OCHAS design and construction shall meet the requirements of MIL-T-28800 for Type II equipment.

3.1.2 Power requirements. The OCHAS shall operate from a source of 103.5V to 126.5V at 50 and 60 Hz ±5% single-phase, 10 A input power as specified in MIL-T-28800.

3.1.2.1 Fuses or Circuit Breakers. Fuses or circuit breakers shall be provided. If circuit breakers are used, both sides of the power source shall be automatically disconnected from the equipment in the event of excessive current. If fuses are used, only the line side of the input power line, as defined by MIL-C-28777, shall be fused. Fuses or circuit breakers shall be readily accessible.

3.1.2.2 Power Connection. The requirements for power source connections shall be in accordance with MIL-T-28800 with a 6-foot minimum length cord.

3.1.3 Dimensions and Weight. Maximum dimensions shall not exceed the following: 24 inches in width, 12 inches in height, and 20 inches in depth for

the humidity analyzer. 6 inches in width, 4 inches in height, and 7 inches in depth for the high range chilled mirror sensor. The weight shall not exceed 35 pounds for each component.

3.1.4 Lithium Batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

3.2 Environmental Requirements. The OCHAS shall meet the environmental requirements for a Type II, Class 5, Style E equipment with the deviations specified below.

3.2.1 Temperature and Humidity. The OCHAS shall meet the conditions below:

	Temperature (^{O}C)	Relative Humidity(%)
Operating	10 to 30	95
	30 to 40	75
Non-operating	-40 to 70	Not Controlled

3.2.2 Electromagnetic Compatibility. The electromagnetic compatibility requirements of MIL-T-28800 are limited to the following areas: CE01, CE03, CS01, CS02, CS06, RE01, RE02 (14 kHz to 1 GHz), and RS03.

3.3 Reliability. Type II reliability requirements are as specified in MIL-T-28800.

3.3.1 Calibration Interval. The OCHAS shall have an 85% or greater probability of remaining within tolerances of all specifications at the end of a 12 month period.

3.4 Maintainability. The OCHAS shall meet the Type II maintainability requirements as specified in MIL-T-28800 except the lowest discrete component shall be defined as a replaceable assembly. Certification time shall not exceed 60 minutes.

3.5 Performance Requirements. The OCHAS shall provide the following capability as specified below. Unless otherwise indicated, all specifications shall be met following a 30-minute warm-up period.

3.5.1 Temperature Requirements. The OCHAS shall meet the following temperature requirements.

3.5.1.1 Temperature Accuracy. The OCHAS shall have a temperature accuracy of +/- 0.2 ^{O}C or better.

3.5.1.2 Temperature Measurement Range. The OCHAS shall have a temperature measurement range of -80 to +100 ^{O}C.

3.5.1.3 Temperature Sensitivity. The OCHAS shall have a temperature sensitivity of +/- 0.05 ^{O}C or better.

3.5.1.4 Temperature Repeatability. The OCHAS shall have a temperature repeatability of +/- 0.05 ^{O}C or better.

3.5.1.5 Temperature Hysteresis. The OCHAS shall have a temperature hysteresis of +/- 0.01 ^{O}C or better.

3.5.1.6 Temperature Response Time. The OCHAS shall have a temperature response time of le